

Franklin County Public Safety

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ALS PROTOCOL: AC-8

Pulmonary Edema/CHF

I	PM	
S	S	Manage Airway/Ventilate as indicated. High Flow Oxygen.
S	S	CPAP, if respiratory distress AND SpO2 < 91% on High Flow Oxygen.
S	S	Monitor EKG, Pulse Oximetry, End Tidal CO2 if available.
S	S	Unstable Cardiac Arrhythmia, follow appropriate protocol.
S	S	Initiate IV/IO NSS.
S	S	<p><i>Systolic Blood Pressure, determines drug therapy:</i></p> <p><u>SBP > 100mmHg¹</u></p> <p>Give NTG 0.4mg SL (if not taking Viagra class drugs)² repeating 1-3 tablets every 3-5 minutes³</p> <ul style="list-style-type: none"> - 3 SL Tablets for <u>SBP > 180</u> every 3-5 minutes - 2 SL Tablets for <u>SBP > 140-180</u> every 3-5 minutes - 1 SL Tablet for <u>SBP > 100-140</u> every 3-5 minutes
O	O	<p><u>SBP < 90mmHg¹</u></p> <ul style="list-style-type: none"> -Consider careful IV fluid bolus, up to 250ml NSS -Dopamine Infusion, begin 5mcg/kg/min and increase by 5 mcg/kg/min every 10 minutes until SBP > 100. Do Not exceed infusion rate of 20mcg/kg/min unless order from On Line Medical Command
S	S	Wheezing and has history of reactive airway disease, consider treatment with Albuterol Nebulizer⁴ .
O	O	<p><u>SBP > 90mmHg</u></p> <p>-If evidence fluid overload status⁵ and low probability of pneumonia⁶ and patient already takes a diuretic, administer Furosemide 40-100mg slow IVP⁷.</p>
O	O	Anxiety-detrimental to patient's condition, administer Valium 2.5mg slow IVP.

Notes:

- Hypotension in pulmonary edema may indicate poor cardiac function. Aggressive use of diuretics and nitroglycerine could result in significant hypotension and further reduction of cardiac output. Contact online medical command to discuss treatment options in these patients.
- WARNING:** Patients who take medications for Erectile Dysfunction can have fatal hypotension if given Nitroglycerin.
DO NOT GIVE NTG to Patients:
 - Who have taken **sildenafil (Viagra/Revation)** or **vardeafil (Levitra)** within 24 hours.
 - Who have taken **tadalafil (Cialis)** within the last 48 hours.
 - These medications may be used for conditions other than Erectile Dysfunction, such as Pulmonary Hypertension (**Revation**).
- NTG should be repeated every 3-5 minutes as long as SBP is greater than 100. Use SBP to determine the dosing of SL NTG to use. One 0.4 mg NTG given every 5 minutes is equivalent to an infusion of 80mcg/minute.
- Nebulized Bronchodilators are not usually harmful in Pulmonary Edema/CHF if there is associated reactive airway disease. Continuous EKG monitoring for increased ectopy and dysrhythmias should be maintained.
- Furosemide (Lasix) administration is not a primary treatment modality in the pre-hospital phase. Generally, patients who may benefit from diuretics demonstrate a slower onset of symptoms, progressive weight gain and fluid retention and have normal blood pressure.

Replaces WVEMS Protocol AC-8

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Sept. 20, 2008

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Patients may have history of stopping diuretics or of taking a reduced dose. They may have history or salt indiscretion.

6. Administration of diuretics in patients with pneumonia increases their mortality.
7. Patients not on diuretics should receive an initial low dose of 20-40mg and those on chronic therapy should receive up to their total daily dose

Performance Improvement Markers

A. Documentation

1. Complete set vitals initially, including SpO2, ETCO2 if available. Minimal one additional set prior to completion of transport.
2. Blood Pressure after each dose NTG.

B. Outcomes

1. ED diagnosis (CHF, Pneumonia, COPD) compared to protocol use.

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